

REMARKS

Claims 1-9 are now pending in the application. Claim 9 is currently amended. No new matter has been added. Support for the amendment may be found on page 4 lines 14-17, page 5 lines 10-13, page 26 line 26 bridging page 27 line 5, and throughout the specification as originally filed. The Examiner is respectfully requested to reconsider and withdraw the rejection(s) in view of the amendments and remarks contained herein.

REJECTION UNDER 35 U.S.C. § 102 AND § 103

Claim 9 stands rejected under 35 U.S.C. § 102(b) as being anticipated by Deeg et al. (U.S. Pat. No. 3,830,749). Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deeg et al. in view of Mori et al. (U.S. Pat. No. 6,459,197). Claim 5 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Deeg et al. in view of Mori et al. in further view of Hirayama et al. (U.S. Pat. No. 3,549,554). Claims 6-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Deeg et al. in view of Mori et al. in further view of Rasch et al. (U.S. Pat. No. 3,548,241). These rejections are respectfully traversed.

The present invention relates to phosphor adhesive glass composites for use in fluorescent lamp devices, which serve to improve adherence of phosphor compounds to the fluorescent lamp or bulb glass, hence preventing spalling of the phosphor film on the glass. Further, the phosphor glass composites of the claimed invention provide suppressed chromaticity shift and coloration of the fluorescent bulb, and further permit thickening agents present in the film precursor to be completely decomposed, burned, and

removed. In particular, Claim 9 recites such a specific phosphor adhesive glass composite composition. Claims 1-5 recite fluorescent devices that comprise such a phosphor adhesive glass composite and a phosphor. Claims 6-8 recite fluorescent lamps that comprise a phosphor adhesive glass composite and a phosphor.

The Deeg reference discloses a high damage threshold glass for use in conjunction with lasers, but has no disclosure, suggestion or motivation of a phosphor glass adhesive composition. Claims 1-9 each have a common limitation that the phosphor composite glass adhesive comprises ZnO up to 40 mol %. Deeg does not disclose a glass composition having ZnO and further explicitly teaches away from including such a compound into a composition. The Deeg reference specifically states that the glass should be free of impurities, such as metals or metallic compounds, including Zn and ZnO. See Col. 2 lines 28-30 and Col. 4 lines 45-49.

It is respectfully suggested that the Examiner has not made out even a *prima facie* case of obviousness. Applicants submit that the cited references cannot form the basis of an obviousness rejection because the cited references fail to disclose or suggest each and every limitation of the claims, fail to provide the necessary motivation or suggestion to combine, and further, the Deeg and Hirayama references are non-analogous art for the instant claims.

Non-analogous art is art that is neither within the inventor's field of endeavor nor reasonably pertinent to the particular problem with which the inventor was involved.

In re Wood, 202 U.S.P.Q. 171, 174 (C.C.P.A. 1979); *In re Clay*, 23 U.S.P.Q.2d 1058, 1060 (Fed. Cir. 1992).

The high damage threshold laser glass of Deeg and the phosphor adhesive glass composites of the instant claims belong to separate and unrelated arts. The Deeg reference relates to glass that has a high resistance to self-damage when subjected to high intensity laser energy by avoiding metallic and semi-metallic inclusions (See *e.g.*, Abstract, Col. 1 lines 35-42, Col. 2 lines 18-22) and has no disclosure or suggestion to employ such compositions in a phosphor adhesive glass composite composition in a fluorescent light device.

As discussed above, the presently claimed invention relates to compositions that form phosphor adhesive glass composites which promote even distribution and sufficient adhesion of phosphor particles on a glass substrate, with appropriate color, luminousness and chromaticity. (See *e.g.*, Applicants' specification at Page 1 lines 19-22, Page 2 lines 21-27, and Page 4 lines 6-12, for example). Thus, phosphor adhesive glass composites and laser glass are distinct and non-analogous arts.

If the reference is not within the field of the inventor's endeavor, the question becomes whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *Id.* In this regard, not only are the fields of endeavor entirely distinct, but the problem to be solved in the present invention is not even remotely similar to that to be solved in the laser glass art. As discussed above, in the present invention the objective is to create a phosphor adhesive glass composite that provides even distribution of the phosphor particles to ensure even emission of visible light, to

provide durability of the phosphor glass adhesive composites to prevent spalling, and to promote stability of the glass adhesive composites to maintain desirable color properties of the phosphorous, as well as to have glass transition and melting properties that permit a thickening agent used during processing to completely decompose and burn away during processing of the glass tube while maintaining the physical integrity of the phosphor film.

The objectives of the present invention are totally different from that of Deeg, hence the physical properties of the glass of the presently claimed invention are also totally different from those of Deeg. One of the objects of the Deeg reference is to eliminate metallic or semi-conductive inclusions in the laser glass melts. Thus, Deeg explicitly states that laser glass should not contain compounds of metals including zinc, among others. See Column 2 lines 28-33. The glass of Deeg does not have physical properties for attaining the objectives of the present invention. One of skill in the art would not look to the glass of Deeg, which provides a high damage threshold glass for use with lasers, as there is no commonality with the presently claimed invention in the problems presented or solutions provided.

In this regard, the Deeg reference not only fails to disclose each and every limitation of the claims, in particular those of amended Claim 9, but further is non-analogous art. Further, the Deeg reference lacks any motivation and/or suggestion to be combined with other references to arrive at the presently claimed invention. Rather, Deeg distinctly teaches away from the presently claimed invention. As such, Deeg, standing alone or in combination with Mori, Hirayama and/or Rasch does not anticipate or render Claims 1-9 as obvious.

Furthermore, the Mori reference does not disclose fluorescent lamps having glass composites and does not account for the deficiencies of the Deeg reference. While the Mori reference discloses various phosphor blends for a phosphor layer, it contains no disclosure of a glass composite adhesive for the phosphor particles. At Column 6 lines 55-65, the Mori reference discloses that the specific phosphor blend is mixed with solvents, thickeners and/or binders, but there is no disclosure of an adhesive glass composite composition. As such, the Mori reference cannot account for the deficiencies of the Deeg reference discussed above and does not render Claims 1 – 9 obvious.

The Hirayama reference discloses glass for lasers. Hirayama has no disclosure or suggestion of fluorescent devices whatsoever, nonetheless of phosphor adhesive composite glass as recited in Claims 1-9. Hirayama is in the same field of invention as the Deeg reference, namely that of glasses for lasers, and as such, is non-analogous art to the field of phosphorous adhesive composite glass of fluorescent devices, as discussed above in the context of Deeg. As such, the Hirayama reference when combined with Deeg and/or Mori does not render the invention recited in Claims 1 – 9 obvious.

The Rausch reference is cited for its disclosure of a nonlinear discharge path and does not account for the deficiencies of the Deeg, Mori, and/or Hirayama references. In light of the above comments, Applicants respectfully submit that the Deeg, Mori, Hirayama, and/or Rausch references either singly or in combination, do not establish a *prima facie* case of obviousness and Claims 1–9 are non-obvious. Thus, Applicants respectfully request reconsideration thereof.

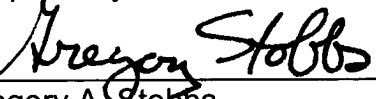
CONCLUSION

In view of the above amendment, applicant believes the pending application is in condition for allowance. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Applicant believes no fee is due with this response. However, if a fee is due, please charge our Deposit Account No. 08-0750, under Order No. 5077-000206/US from which the undersigned is authorized to draw.

Dated: February 1, 2006

Respectfully submitted,

By 

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